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part of the responsibility for the hopeless confusion which they allege exists regarding the distinction between mass and weight. Their own explanation of this matter however differs from mine chiefly in the picturesqueness of the language employed. I have, indeed, recognized² that if full rigor is insisted on it is necessary to make a distinction not mentioned by Professors Franklin and MacNutt. The word weight, according to scientific usage, does not usually mean the actual "force with which the earth pulls on a body," but something which differs from this because of the earth's rotation. I have not advocated introducing this distinction in the first explanation of weight to students; but it can not be permanently avoided if any important attainment is reached in the study of dynamics.

Since the writers have referred to me in connection with the meaning of the division by g , I may say that I certainly am not one of those who believe that weight is converted into mass by dividing by g or by any other process. I believe, however, that the fact should be made clear that mass, like any other measurable magnitude, is expressible in different units; and that the reduction from one unit to another involves precisely the same kind of reasoning in the case of mass as in the case of length or velocity. One can not understand the reduction of a length from feet to meters unless he understands the meaning of both the foot and the meter; a similar statement holds concerning the reduction of a mass from pounds to tons, or from pounds to "slugs." Moreover, I see no reason why the unit which has been called the slug should be regarded with ridicule, or even with semi-ridicule. The question of what unit to employ for any given purpose is properly decided by convenience. The convenience of the "slug" is due to two facts—(1) that the pound-force is customarily employed in a great deal of practical work and (2) that the dynamical formulas almost universally used are based upon a relation of units such that *unit force acting upon unit mass causes unit acceleration*. And there should be no more difficulty in understanding the definition

of the "slug" than that of the dyne or the "standard pound-force" or any other unit which is defined by an appeal to the law of acceleration.

L. M. HOSKINS

QUOTATIONS

BRITISH SCIENTIFIC MEN AND THE GOVERNMENT

IN addition to appointing committees to consider suggestions or inventions, the Royal, Chemical and Physical Societies have taken steps to obtain registers of their fellows classified according to special knowledge and to scientific services which the fellows are willing, as well as specially qualified, to perform. The idea in each case is to secure cooperation among the fellows of the particular societies, and to examine by means of committees any promising suggestions relating to munitions of war or kindred subjects. No one knows precisely what will be done with the registers when they have been completed. Each society seems to be compiling its list independently and without any clear view of the use which will be made of the experts' services which will become available by the response to its circular. No scheme has yet been put forward by which definite national duties will be assigned to the hundreds of scientific men who are enrolling themselves on the registers of their respective societies. . . .

The laboratories of our universities, university colleges and technical institutions are at the disposal of the government, and in many of them men are devoting twelve hours a day to work in connection with the supply of munitions of war. A few days ago the members of the Royal Institution decided to offer the resources of their laboratories and of the Davy Faraday Research Laboratory to the government for the prosecution of any particular research by officers of the admiralty, war office or ministry of munitions; and the managers invited communication from these departments "in case there is any field of research in relation to or connected with chemical and physical science, or either of them, to which the professors, assistants and staff of the Royal Institution or of the laboratory can usefully direct their attention with the view of

² SCIENCE, April 23, 1915, p. 611.

giving assistance to his Majesty's government in the conduct of the war."

We notice that this resolution was sent to the First Lord of the Admiralty, the Minister of War, the Minister of Munitions and the chairman of the Inventions Board of the Admiralty, but we can scarcely suppose that each of these officers of state will act independently in making whatever use is possible of the offer. Mr. Lloyd George has announced in the House of Commons that he has made arrangements with the Secretary of State for War to take over the invention work relating to the munitions of war for the supply of which his department is responsible. He has also arranged with the First Lord of the Admiralty to take over the work relating to new expedients and inventions for purely army purposes which are at present in charge of that department. . . .

Most people assume that these services will be voluntary; and a correspondent directs our attention to the fact that in the forms circulated by the Physical Society in connection with the proposed "War Register," it is stated that: "It is to be understood that all service would be voluntary, and unpaid, being given for the good of the country during this period of emergency." He adds: "I should like to inquire how it comes about that the Physical Society is not in a position to offer remuneration for work of the character specified in the circular on a scale at least bearing a reasonable proportion to the wages paid by the government for the performance of less responsible labor. Is it really for the good of the country that this work should be unpaid?"

Government departments and statesmen find their requests for expert advice and guidance responded to so willingly by scientific men and societies that they overlook the necessity of making any recompense for work done. In the medical services every qualified practitioner receives rank and reasonable pay, while consultants are given generous retaining fees. In legal circles also no advice is expected without a retainer being attached to it; and in this connection we are interested in the announcement that "according to a statement made in the House of Commons Sir John Simon, as attor-

ney-general, drew £18,000 as his remuneration for the past year." It should be unnecessary to urge that the laws of nature are of as much importance as the laws of the land, and that as in the present crisis men of science can be of greater service to the nation than lawyers or politicians, they should receive at least sufficient reward for it to enable them to put aside their daily work in order to take up national duties. There will be no lack of volunteer workers among scientific men, but the state should understand that its responsibility for payment on account of expert opinion is at least as great in the case of science as it is in law, medicine and engineering.—*Nature*.

SCIENTIFIC BOOKS

The Social Problem, A Constructive Analysis.

By CHARLES A. ELLWOOD, professor of sociology in the University of Missouri. In the Citizens' Library of Economics, Politics and Sociology. Edited by RICHARD T. ELY, professor of political economy in the University of Wisconsin. New York, The Macmillan Co., 1915. Pp. 249. \$1.25.

"The present crisis in our civilization," we are told in the preface of this book, "calls for a reconstruction of our social philosophy." The author confidently undertakes the task. Decay is noted in religious belief, moral ideals, political honor, conflict of classes, the breakdown of regulation and control, the demand for a strong man and centralization in government. "The very forces which undermined Roman civilization, viz., commercialism, individualism, materialistic standards of life, militarism, a low estimate of marriage and the family, agnosticism in religion and ethics, seem to be the things which are now prominent, if not dominant, in Western civilization." Many new problems have suddenly arisen from increase of population, increase of knowledge, intermingling of races and cultures, increasing interdependence of nations, the invention of new machines and various other developments.

Back of these problems lies *the* social problem. Reformers who emphasize special problems do not grasp it. Those whose vision is